



Presents The New Pharma Intermediates Production Unit

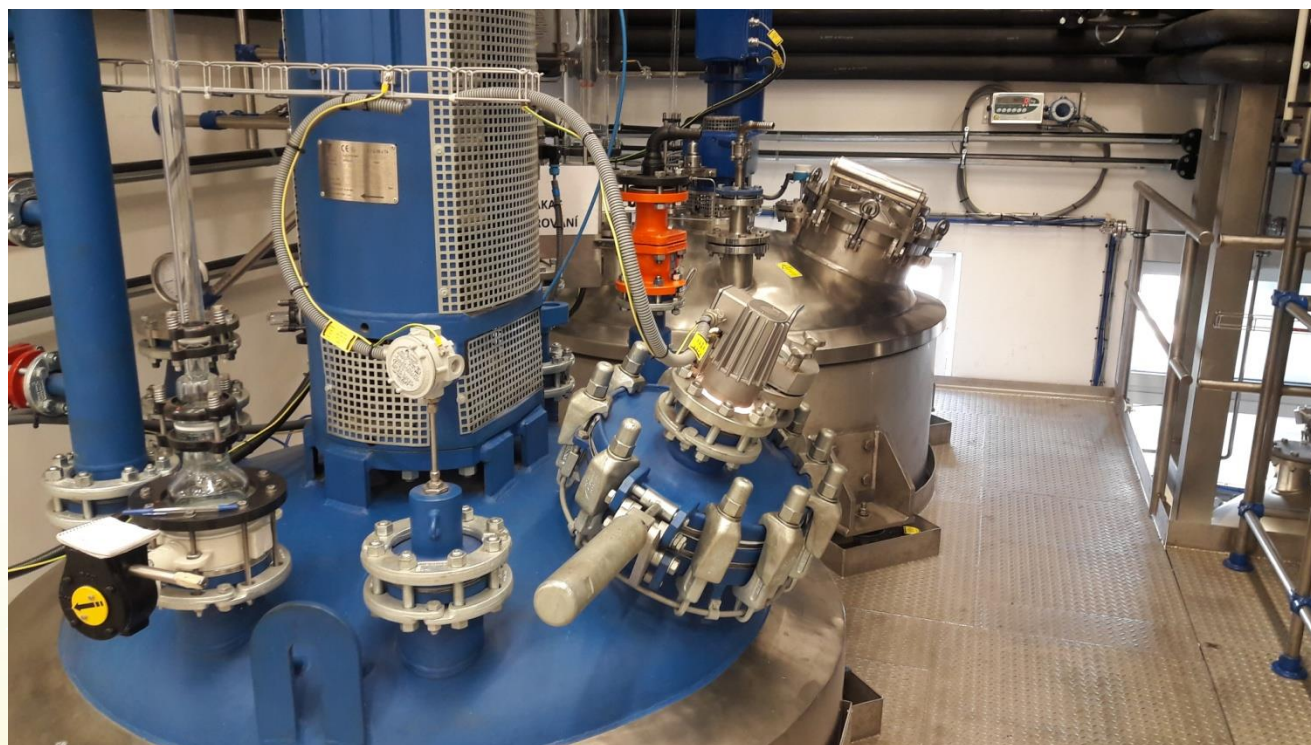


Main characterization of unit

- Priority dedicated for the pharma intermediate production
- Production under GMP standards
- Multipurpose arrangement of process apparatus
- All unit operations required for organic syntheses (reaction, extraction, evaporation, distillation, filtration, drying)
- Wide range of process conditions:
temperature from -25 to 240 °C, pressure from -1 to 6 bar /g/
- Corrosive inert devices: stainless steel, glass, glass-lined
- Local and remote process control
- Total production area: 400 m²
- Total investment cost: 3,5 mil. EUR

Chemical reactors

3 x glass-lined, 2 x stainless steel, total volume 10 m³,
turbulent mixing, two stage agitators, double mechanical seals,
control speed of rotation, tenzometric weighting.



Process glass

4 x SiC horizontal condensers /4 x 8 m²/, double seals of tubes, spirall vertical coolers, glass tanks with volume measuring.



Process filtration

Filtration and washing under pressure /6 bar/, drying under vacuum, heating jacket, max. temperature: 200 °C, filtration area: 1 m², material: AISI 316Ti, polished surface, touch panel and remote control.



Distillation technology

Vacuum distillation column, diameter: 500 mm, packing SULZER BX, material: AISI 316Ti, up to 40 theoretical stages, distribution system, falling film evaporator /boiler/, temperature sensitive distillation.



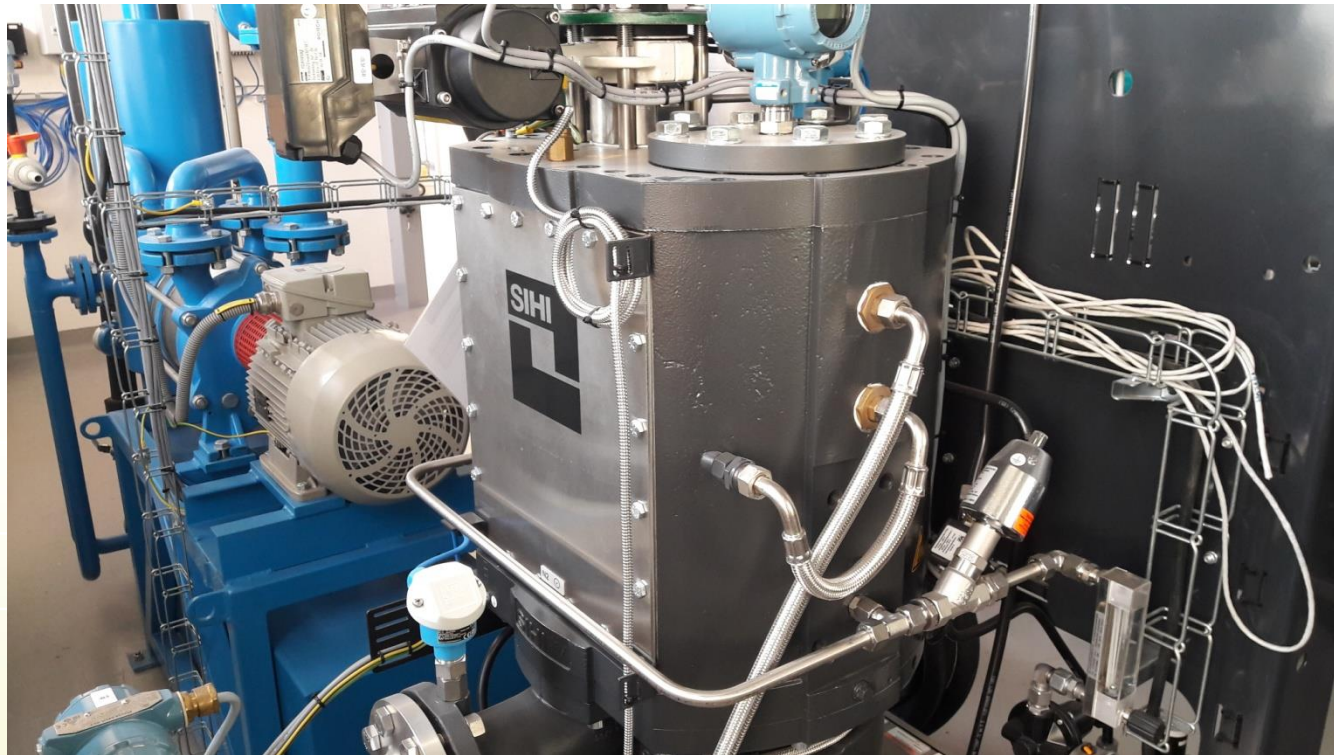
Process thermostats

Circulation thermostats /3 pc./, working temperature: -25 – 240 °C,
heating capacity: 2 x 100 kW, cooling capacity: 1 x -60 kW,
temperature stability: +/- 0,5 °C, heat transfer liquid: Marlotherm LH.



Vacuum technology

Dry vacuum pump, SIHdry H250, Profibus control system,
suction pressure up to 0,1 mBar, capacity 240 m³/h /1 mBar/
Liquid vacuum pump for medium vacuum /5 – 10 kPa/.



Cooling units

Colling, compressor units /2 pc./, cooling capacity: 2 x -30 kW,
Circulating pumps, automatic control, cooling medium: glycol – water.



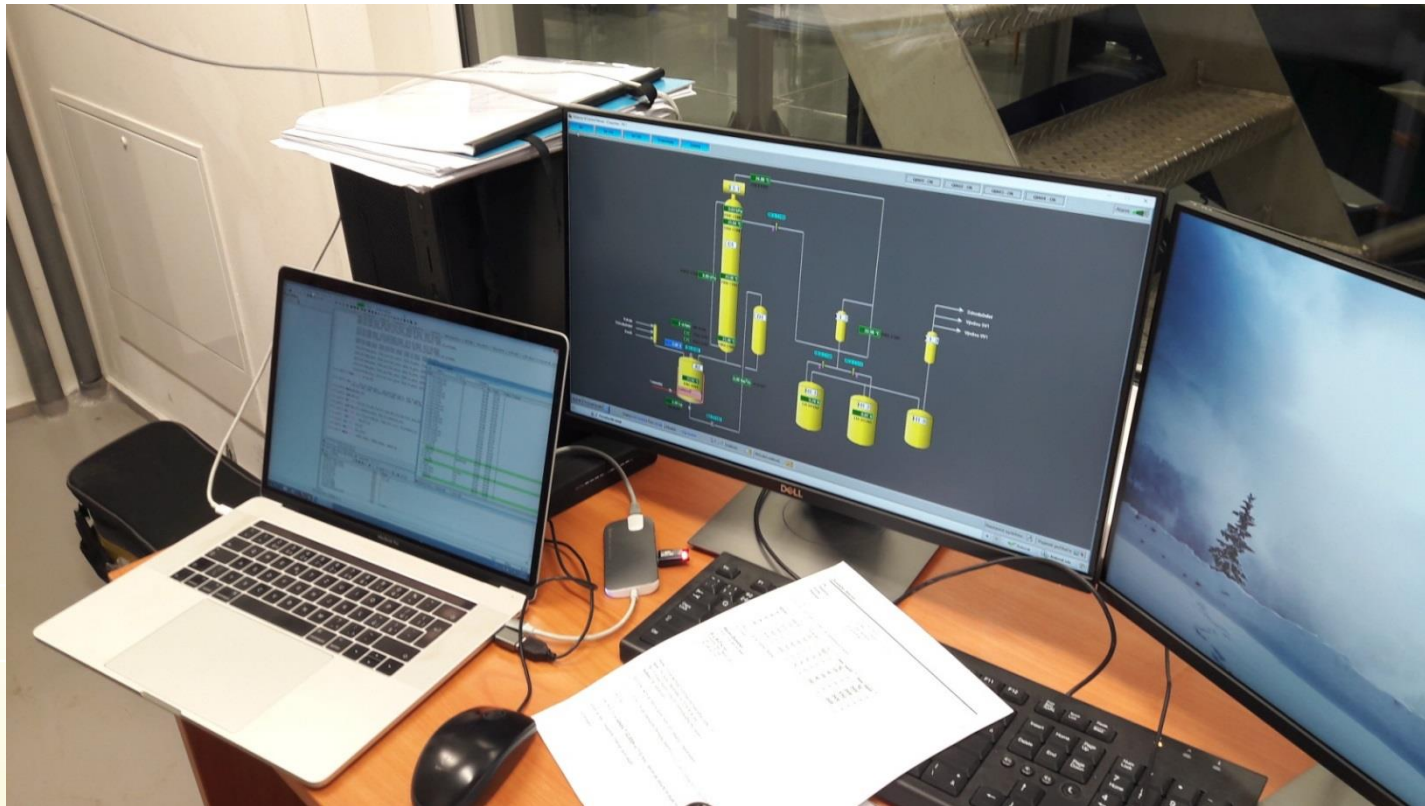
Air ventilation system

Inlet air filtration and heating, treatment of the outlet air, air flowrare: 4 Nm³/s, local exhaustion of technology, purification of the waste gas /chemisorption and active carbon adsorption/.



Control system

SCADA/HMI system Reliance for monitoring and control of processes,
PLC Siemens, Ethernet Interface, local control by touch panels.



Fire protection system

Fire detection and fire alarm system, acoustic and optic signalization, VOC concentration monitoring and signalization.



Basic GMP standards

Separated personal a material corridors, no cross contamination, particle control, easy washable surfaces.



GMP Unit - Main characterization

- Priority dedicated for final reaction and purification steps of the pharma intermediates and APIs production
- Certified in compliance with cGMP requirement
- Multipurpose arrangement of process apparatus
- Used for organic syntheses (reaction, extraction, distillation and filtration)
- Wide range of process conditions:
temperature from -20 to 200 °C, pressure from -1 to 6 bar /g/
- Corrosive inert devices: stainless steel, glass, glass-lined
- Local and remote process control
- Total investment cost: 1,0 mil. EUR

GMP Production Line

Clean room Class D > 0,5 μm 3 520 000 particles/m³

2 x glass-lined vessel, 2 x stainless steel vessel, total volume 2 m³



Final Operations Unit - Main characterization

- Dedicated for drying of pharma intermediates and APIs
- Built in accordance with cGMP requirement, in operation during 2Q. 2021
- Used for drying of organic compounds from water, alcohols, ketons, ethers, hydrocarbons, etc.
- Air filtration through HEPA filters class H13
- Wide range of process conditions:
temperature from 0 to 150 °C, pressure from -1 to +1 bar /g/
- Corrosive inert devices: stainless steel
- Total investment cost: 1,0 mil. EUR

Final Operations Unit

2 x Atmospheric tray dryer, working temperature up to 120°C

1 x Vacuum tray dryer, working pressure: from -1 to +1bar

Dryers placed in separated closed rooms



Final Operations Unit

1 x Conical vacuum dryer, working temperature up to 150°C,
working pressure: from -1 to 0 bar
Agitator speed of rotation 5-20 rpm





Výzkumný ústav organických syntéz a.s.
Rybitví č.p. 296, 533 54 Rybitví, Czech Republic
www.vuos.com

